

Amendments to the Specification:

Please replace paragraph [12, 27, 28 and 31-34] with the following amended paragraphs:

[12] However, the background art SDH system processes the asynchronous signal by including the elastic buffer 21, the write pointer generating unit ~~45~~²⁵, the read pointer generating unit ~~26~~, and the serial/parallel changing unit 22 in a respective channel. Therefore, as shown in Figure 1, if the background art SDH system processes 84 channels of DS-1 signals, it needs 84 write pointer generating units, read pointer generating units, and serial/parallel changing units, respectively. In addition, in the background art SDH system, the number of gates needed to implement the respective channels are increased in the case of a multiple channel embodiment, whereby the system structure is complex.

[27] Figure 3 is a block diagram showing a serial data mapping apparatus for a synchronous digital hierarchy system according to a preferred embodiment of the present invention. As shown therein, the serial data mapping apparatus comprises an STM-1 address generating unit 41 generating a mapping address stm1 indicating a mapping position of new data; a VC mapping unit 43 for mapping the DS asynchronous signals DS-1, DS-1E, DS3E, and DS4E as VC signals VC11, VC12, VC3, and VC4 according to the mapping address stm1; and an STM-1 formatter 42 for pointer processing and multiplexing a virtual container of the VC signal outputted from the VC mapping unit ~~42~~⁴³, whereby an STM-1 signal is generated.

[28] As shown in Figure 4, the VC mapping unit 43 comprises a plurality of elastic buffers 31 for storing the asynchronous DS-1 signal of 84 channels and DS-1E signals of 63 channels; a write pointer generating unit 32 generating write addresses WA of the elastic buffers 31; a read pointer ~~controlling-generating~~ unit 33 generating a read address RA of the elastic buffer 31; a VC1 mapper 34 multiplexing parallel asynchronous data Pd of the byte unit, read in the elastic buffers 31, as VC signals VC11/VC12 according to a format controlling signal; and a VC1 framer 35 for identifying the mapping position of asynchronous signals according to the format address stm1 of the STM-1 address generating unit 41, and controlling operations of the elastic buffers 31, the read pointer ~~controlling-generating~~ unit 33, and the VC1 mapper 34 according to the identified mapping position.

[31] The VC1 framer 35 chooses one buffer among the 84 elastic buffers 31 and generates sts1/group/channel SONET addresses for controlling the read pointer ~~controlling-generating~~ unit 33. Consequently, a certain elastic buffer 31 is chosen for generating the sts1/group/channel addresses and the read pointer ~~controlling-generating~~ unit 33 generates a read address RA and outputs it to the chosen elastic buffer 31.

[32] That is, the read pointer controlling unit 33 does not read the data as a bit unit from the elastic buffer 31, instead it reads the data a byte unit (8 bit). Accordingly, the read pointer ~~controlling-generating~~ unit 33 ~~controls a read pointer generating unit (not shown) and~~ outputs a read address, that is, a start bit of 8 bit data to the elastic buffer 31. Then the elastic buffer 31 outputs a parallel asynchronous signal of 8 bits according to the start bit. At that time, the read pointer ~~controlling-generating~~ unit 33 increases the read address RA by +8 in order to read the next 8 bits of data.

[33] However, in the asynchronous signals stored in the elastic buffers 31, a STUFF bit, that is, Null data is included as well as the data signal. Therefore the read pointer ~~controlling-generating~~ unit ~~35-33~~ judges whether the read address RA is increased by +8, +6, or by +4 according to controlling signals Ctrlen and ien outputted from the VC1 framer ~~34-35~~ and, after that, generates a start bit of the read address RA of the asynchronous signal which will be read next time.

[34] Also, the read pointer ~~controlling-generating~~ unit 33 controls the operation speed of the read pointer generating unit according to controlling signals Psr and Nsr outputted from the VC1 framer 35. That is, the read pointer ~~controlling-generating~~ unit 33 increases by +1 or decreases by -1 the operation speed of the read pointer generating unit according to the

Serial No. **09/939,627**

Docket No. **P-0251**

Amendment dated **June 30, 2005**

Reply to Office Action of **April 6, 2005**

controlling signals Psr and Nsr, which are designating the difference between the read address RA and the write address WA.